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SOURCE   Die Technik, No 1, p 46.

REVIEW OF ACTIVITIES OF COMPUTING OFFICE AT TECHNICAL COLLEGE IN DRESDEN

Prof Dr A. Willers

The Computing Office at the Institute for Applied Mathematics of the Technical College (Technische Hochschule) at Dresden, established by the efforts of the Director of the Institute, Prof Dr A. Willers, has now been working for 2 years.

At the beginning, the Computing Office was staffed by one scientist and one female calculator. Because of the rapidly increasing tasks assigned to it, the staff had to be increased, and there are now four female calculators, who have had several years' experience in machine calculation and the use of tables. The Computing Office is equipped with fully automatic computing machines and makes use of a great number of tables for the most common functions.

The customers of the Computing Office are the various branches of people-owned industries and the scientific institutes of the universities and schools, chiefly, of course, the Technical College. The following examples represent the work accomplished up until now:

1. Investigation of the stability of circular cylindrical shells, determination of buckling loads, and extensive calculations of tables of cross sectional strength (Schnittkrafttabellen) for shells of various dimensions.

2. Two-dimensional Fourier synthesis for crystallographic investigations.

3. Statistical analysis of extensive series of measurements for the determination of the tolerances of the framework in construction engineering.

- 1 -

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4. Investigations for discovering the mathematical interrelationships of current distribution in multiple-grid tubes.

5. Development of a special slide rule for the spreading formula in the rolling process.

6. Construction of nomograms for special blood tests, and analysis of test data in the rapid machining of metal.

Following is a summary of the problems and methods used:

1. Setting up of tables of functions and analysis of expressions given in formulas.

2. Numerical calculation of definite and indefinite integrals.

3. Representing experimentally discovered curves by mathematical expressions, especially harmonic analysis.

4. Solving of equations and systems of equations (for the calculation of roots of equations of the third to sixth order and for the solution of systems of linear equations, special computing diagrams were developed, which make this frequent task considerably less time-consuming) and numerical and graphical treatment of ordinary and partial differential equations.

5. Mathematical and statistical calculations (quality control, biological and medical experiments).

About the end of 1954 an automatic electric computer, developed at the college's Institute for Applied Mathematics and constructed by the Development Station of the RFT Funkwerk Dresden, will be in use. Many computations, which are time-consuming at present, will then be able to be carried out in a very short time. Some idea of the capacity of this machine can be obtained from the fact that the work which would take four female calculators a whole year to do can be done in a week by this machine.

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